ther Flaſk, ſo as to be born with the mouth downwards, as were the other, but which was not ſtop'd; and theſe I caus'd to be taken up when they had been but 10 Fathom under water; aud found them both entire, but the open Flaſk almoſt full of water; the which being emptied, were both let down again, and taken up at 20 Fathom, when the open Flaſk was entire, tho full of water, but the other broken to pieces.

Lumbricus Hydropicus;

OR

An Eſſay to prove that Hydatides *often met with in morbid Animal Bodies, are a Species of Worms, or Imperfect Animals. By that Learned and curious Anatomiſt* EDWARD TYSON, M. D. *and* R. Soc. S.

THE Title of this Eſſay, I doubt not will be ſome ſurpriſe to the Reader, and may prejudice his Judgment in what I am to offer; which indeed doth give me caution in it. But that I might not impoſe upon his Belief, or what I ſhall mention might not hinder his farther inquiry, 'tis only as an Eſſay. If truth, others Obſervations will confirm it; if otherwiſe, 'twill be a great ſatisfaction to be better inform'd.

By the opportunity given me of diſſecting a *Gazella*, or Antilope brought from *Aleppo*, I obſerved ſeveral *Hydatides* or *Films* filled with limpid Water, about the bigneſs of a Pigeons Egg and oval, which were faſtened to the *Omentum*, and ſome in the *Pelvis* between the Bladder of Urine and the *Rectum*. Upon this occaſion I was very deſirous of ſatisfying my ſelf as much as I could of ſome

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ſome ſuſpicions I had of the like watery Bags, or *Hydatides* I had met with in other Animals, for from what I could then obſerve, I was apt to believe them to be a particular ſort of Inſect bred in animal Bodies, but ſo different from any obſerved out of them, that unleſs upon fuller and farther conſiderations, I durſt not truſt my own thoughts about them.

My preſent Reaſons of ſuſpecting them to be Inſects or at leaſt the Embrios or Eggs of them, are theſe.

Firſt, Becauſe I obſerved them included in an outward Membrane like a *Matrix*, ſo looſely, that by opening it with my finger or a Knife, the inward Bladder containing the *Lympha* or *Serum*, ſeemed no where to have any connexion or hold to it, but would very readily drop out, ſtill holding its Liquor without ſpilling any of it. Upon repeated Experiments of it in this, and other Animals, it gave me opportunity to think how it was poſſible this Humour could come into the inward Bladder without any cohæſion to the outward which involved it.

Secondly, Obſerving them farther by my naked Eye, I perceived that to this inward Bladder there was a Neck or white Body, more opake than the reſt of the Bladder, and protuberant from it: but ſo as I could obſerve an Orifice at the extream of it, which then to me ſeemed to be occaſioned by the retraction of ſome part of it inwards. By this I fancied it might as by a Mouth, ſuck the *Serum* from the outward Membrane, and ſo ſupply its Bladder or Stomach.

Thirdly, But in this Thought I was farther encouraged by the aſſiſtance of my very good friend Mr. *Richard Waller*, whoſe preſence I deſired at the Diſſection, and by imparting to him my Thoughts, that theſe *Hydatides* might be a peculiar ſort of Inſects bred in Animal Bodies; we were reſolved to ſatisfie our ſelves of the Notion, and having obſerved what I have before mentioned, we found that this Neck (upon approaching it to the Candle) did

 really

really move, and that it did protrude and then ſhorten it ſelf. But for a better ſatisfaction, I ſhall give the Figures made by his ingenious Hand; both natural as they appeared to the naked Eye, and what they were diſcover'd to be by the Microſcope.

Fig. 1. Repreſents one of theſe watery Bladders in its natural bigneſs incloſed in its outward Membrane or *Chorion*, its ſhape was almoſt round, only flatted as a drop of Quickſilver will be by lying upon a ſolid. (*a*) ſhews the Neck, ſeen through the Membrane, which in

Fig. 2. is more plainly repreſented, (the outward Membrane being taken off) but as appearing to the naked Eye; where we may obſerve an open orifice at the Extream of it, and that it is made up of circular Rings or Inciſures; which in

Fig. 3. being viewed by a Microſcope, do more evidently diſcover themſelves: This part is granulated with an abundance of fine Eminences all over. The Orifice at the end ſeems here to be occaſioned by drawing itſelf inwards, and upon trial we found it ſo, for in

Fig. 4. Is repreſented the neck of this Worm drawn out its whole length and magnified: Where may be obſerved the leſſening of the Rings, and its tending to a point at the end. And having opened it; within we found two ſmall ſtrings (*aa*) proceeding from the Neck and floating in the Liquor.

What theſe two Strings may be, is hard poſitively to aſſert: Leaving others to their own conjectures, I ſhall deliver mine; That this Worm by protruding its Neck, ſucks from the outward Membrane (which involves it, and is furniſhed with Blood-Veſſels,) the moiſture or nouriſhment which is conveyed by theſe two Strings or Pipes into the Stomach or Bladder, and from whence, as there is occaſion, it may be ſupplied for the nouriſhing the whole Body of the Worm again; for I am apt to believe this Bladder is but a Stomach of the Worm, which will appear

pear leſs unreaſonable if we conſider in ſome Inſects how prodigiouſly large the Stomach is in proportion to the other parts of the Body; in a Leech you may obſerve not a ſingle but above Twenty Stomachs, emptying out of one into another, and running the whole length of the Body. And what *Malpighius* obſerves of the *Silk Worm*, that it would devour in one day as much as was the weight of its whole Body; a Leech will do far more at a Meal.

De Bombyce p. 40.

Some it may be will be more inclin'd to think that the whole is but an Egg or Embrio of another Inſect a forming, and that this Bladder is as it were the *Amnion*, and the outward Coat that includes it the *Chorion*. But could they perfect any ſuch diſcovery, I ſhould think ſo too. But formerly in Diſſecting a Rotten Sheep, wherein I found many of theſe *Hydatides*, and opening ſeveral of them, I could not but obſerve the ſame Structure exactly in all; and doubtleſs had it been otherwiſe, in ſo many, I could not but have met with ſome nearer to Perfection.

Theſe *Hydatides* therefore I cannot but think are a ſort of Worms or Inſects *ſui generis*, and becauſe they contain ſo much water in them, and are uſually to be met with in rotten Sheep which are *Hydropical*: I call them *Lumbrici Hydropici*; not that I think all thoſe *Ciſts* to be met with in morbid Bodies are ſuch; for in ſome I have not obſerved this Neck and Structure of Paths, but only a tranſparent Bladder filled with a *Lympha*, and thoſe I take to be of another kind.

Thus in a Patient ſtill Living and enjoying her Health better than all her life time before; about Ten Years ago I cauſed her Right Side to be opened a little below her ſhort Ribs, whence iſſued out abundance of lympid Water, but what was moſt ſurpriſing, together with it, a great many *Hydatides*; that firſt and laſt, as we gueſſed, there might come out about 500 of theſe Bladders: moſt were entire and fill'd with limpid Water; of others that

were too large for the Orifice, the *Films* were broke, but in none of them could I obſerve the Neck, tho I was inquiſitive to find it, which makes me think them to be different from our preſent ſubject.

As are likewiſe thoſe I have frequently met with in the *Ovaria* or Teſticles of Women who have died *Hydropical*, which I take to be only the Eggs contain'd there, which by an extravagant flux of Humours into them are often ſwell'd to that prodigious bigneſs, that I have taken ſometimes ſeveral Gallons of Liquor out of them.

And what is mentioned *Philoſ. Tranſact.* N°. 188. of thoſe Bladers of Water found in the Urine-Bladder, will come into the ſame number, having obſerved no Neck in any of them.

I ſhall only add, that theſe *Lumbrici Hydropici* I have always found hanging to the Membranous Parts, rather than included in the Body of any of the *Viſcera*, as to the *Omentum*, *Peritonæum*, or the outward Membranes that cover the Diaphragm, Stomach, Liver, Colon, or other Inteſtines.

And we may be leſs ſurpriſed at the odd Structure in this Worm; ſince what I have obſerved of the *Lumbricus Latus* (*Philoſoph. Tranſact.* N°. 146. *p.* 113.) and of the *Teres* (*Philoſ. Tranſact.* N°. 147. *p.* 153.) is as wonderful, tho in a different manner. And whoever has the curioſity of obſerving the Inwards of the vaſt Kingdom of Inſects, cannot want Subjects enough for exciting his admiration.

De

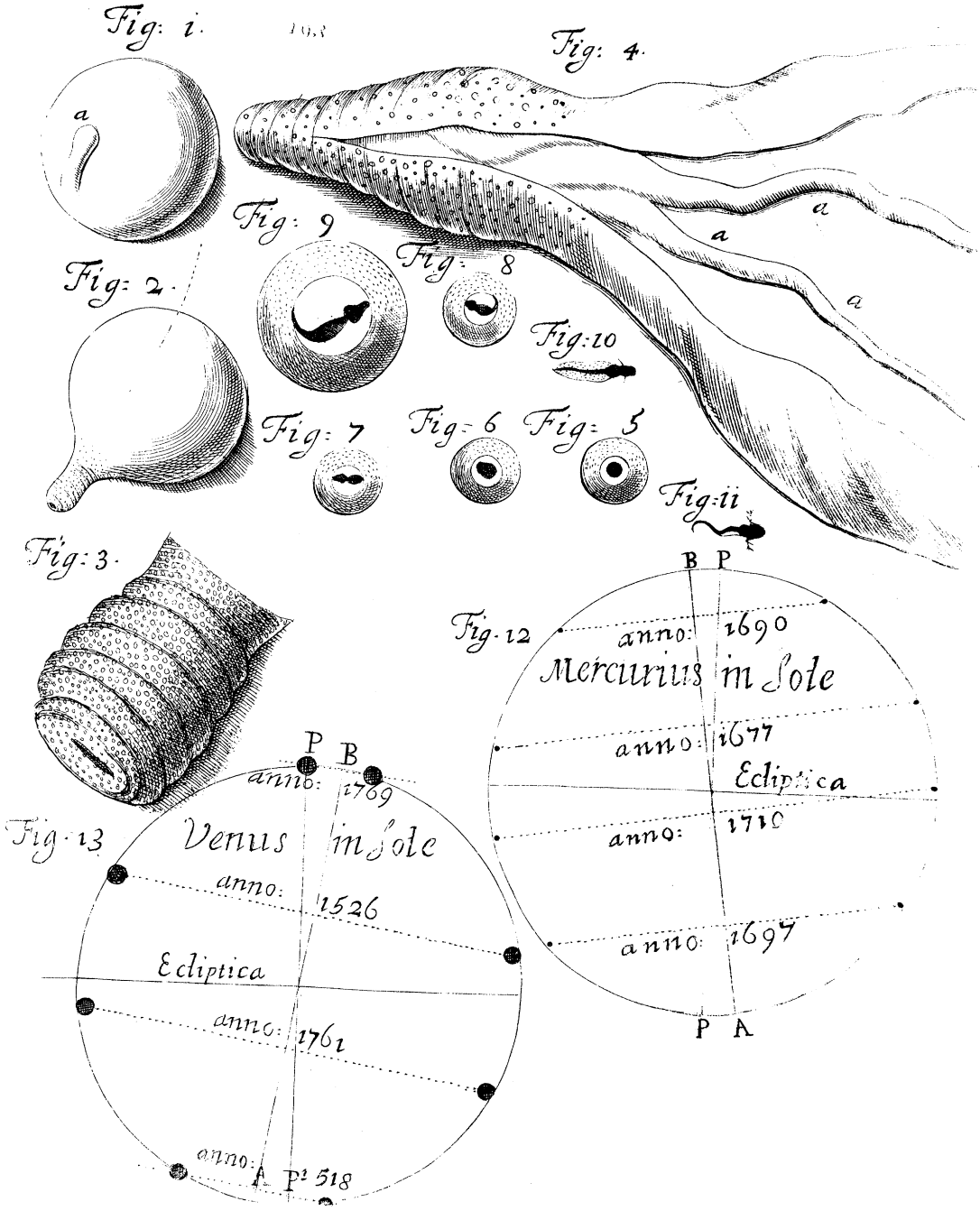
Fig: 1.
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Fig: 4.
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Fig: 9
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Fig: 2.
Fig: 10
Fig: 7
Fig: 6
Fig: 5
Fig: 11
Fig: 3.
Fig: 12
B P
anno: 1690
Mercurius in Sole
anno: 1677
Ecliptica
anno: 1710
anno: 1697
P A
P B
anno: 1769
Fig: 13
Venus in Sole
anno: 1526
Ecliptica
anno: 1761
anno: A P: 518